Marta Mª Hernando Álvarez (1964) es Ingeniero Industrial desde 1988 por la Universidad de Oviedo, obteniendo el grado de doctor por la misma universidad en 1992.

Desde 1988 pertenece al Área de Tecnología Electrónica de la Universidad de Oviedo, donde ha desempeñado distintos puestos docentes y es Catedrática de Universidad desde noviembre de 2010. Sus tareas docentes se han desarrollado en las titulaciones de Ingeniería Industrial, Ingeniería de Telecomunicación, Ingeniería Técnica Informática, Ingeniería Técnica de Telecomunicación, Ingeniería Técnica Industrial, Grado en Ingeniería en Tecnologías y Servicios de Telecomunicación y Grado en Ingeniería Electrónica Industrial y Automática.

En cuanto a su actividad investigadora, ésta siempre se ha llevado a cabo en torno a los Sistemas de Alimentación Electrónica, especialmente en el ámbito de los convertidores CA/CC, correctores del factor de potencia, sistemas de alimentación ininterrumpida y convertidores bidireccionales. Como resultado de esta actividad, ha dirigido 6 tesis doctorales y ha participado en más de 60 proyectos de investigación tanto con financiación pública como privada. También ha publicado más de 50 artículos en revistas nacionales e internacionales, así como más de 140 ponencias en congresos nacionales e internacionales. Es inventora en dos patentes promovidas por Alcatel España S. A., una de ellas extendida a diversos países de la Unión Europea. Tiene reconocidos 5 tramos de investigación y un tramo de transferencia por la CNEAI.

Vicerrectora de Recursos Materiales y Tecnológicos de la Universidad de Oviedo entre junio de 2016 y febrero de 2021.

CURRÍCULUM VÍTAE NORMALIZADO

Roberto Giral Castillón

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GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

FECYT INNOVACIÓN

Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

Roberto Giral received the B.S. degree in Ingenieria Técnica de Telecomunicación, the M.S. degree in Ingenieria de Telecomunicación, and the Ph.D. (with honors) degree from the Universitat Politècnica de Catalunya, Barcelona, Spain, in 1991, 1994, and 1999, respectively. From 1992 to 2000 he was Assistant Professor and from 2000 to 2019 Associate Professor with the Departament d'Enginyeria Electrònica, Elèctrica i Automàtica (DEEEA), Escola Tècnica Superior d'Enginyeria (ETSE), Universitat Rovira i Virgili (URV), Tarragona, Spain, where he is Full Professor since 2019. From 2000 to 2003 he was secretary of the DEEEA. He was academic coordinator of the doctoral program in Technologies for Nanosystems, Bioengineering and Energy of the URV from Oct 2012 to Jan 2015. From Jan 2015 to Jun 2018 he was the URV Rector's Delegate for ICTs. Since Feb 2020 he is the academic coordinator of the Master's degree in Industrial Engineering of the URV. He has co-supervised five doctoral thesis, (3 since 2012) and is currently co-supervising two more. Four of the five doctors he has co-supervised are currently employed at Colombian (2, UNAL), Chilean (U. de Talca) and Mexican (UPAEP) universities. There are on-going postdoctoral collaborations with the three doctors having more significant research activity, in particular with the researcher at U.Talca, including a 3-month research stay at his laboratory in 2019.

From 2019 to 2023 he collaborated with the Spanish "Agencia Estatal de Investigación (División de Coordinación, Evaluación y Seguimiento Científico y Técnico), gestor del área: PIN, subárea: Ingeniería eléctrica, electrónica y automática (IEA)".

Recognized with 4 CNAI six-year research terms/sexenios (last in 2019), his research focuses in the field of power electronics and, in particular, in the design and control of AC/DC and DC/DC converters in DC power buses for automotive applications and for distributed renewable generation systems. He is investigating solutions to seamlessly integrate power supplies such as the grid, PV modules with MPPT and current-slope-limited PEMFCs, storage devices like batteries and large capacitors, and pulsating loads. Other important subjects in his research are the parallel-interleaved connection of current-controlled converters, the integrated design of switching power stages and their controllers to achieve the desired closed loop dynamics without subharmonic or chaotic instabilities, and the power regulators design by means of sliding mode and input-output linearization techniques and the subsequent implementation of their controllers either in analog, digital or hybrid ways.

As a researcher of the GAEI (Automatic Control and Industrial Electronics consolidated Group of the URV) he has participated in 17 private and 19 public R&D projects, being the main researcher at three of the projects supported by the Spanish Government and the last four of the private. He is also coinventor of 3 patents: ES2356548 (B1) in 2012, IT1401606 (B1) in 2013 and US11271473B2 in 2022, being the last one a result of a research and transference collaboration with Lear Corporation Holding Spain. He is actually the Director of the GAEI with 13 doctors (12 researchers and 1 permanent research technician), and a variable number of postdocs (1) and Ph.D students (8). Some of the most relevant projects acting as IP were: (PID2021-124229NB-I00) Plataforma de Cargadores de Baterías Embarcados para Vehículos Eléctricos Universal. Funded by AEI/FEDER.

(TEC2012-30952) Convertidor versátil buck-boost no inversor: aplicaciones y control (BBVersaConv).
(T18154S) Stability Study of an On-Board Battery Charger in 2018 and (T19172S) Stability Measurements of an On-Board Battery Charger in 2019, both for Lear Corporation Holding Spain.

General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

Total of 4 six-year research terms awarded (sexenios). Date of last term (2013-2018): June 5th, 2019.
Five co-supervised doctoral Thesis, three of them with European/International distinction and two with honors.
Total citations of the 103 works listed in WoS: 2275 (1090 citations between 2018 and 2024, 156 in 2023). Average citations/item 23,91. With 176 citations, the most cited publication according to WoS is "A Fast Current-Based MPPT Technique Employing Sliding Mode Control".
WoS h-index=28 at April 2024. Scopus h-Index=28.
Scholar Google Indicators: Total citations 4781 (1756 from 2019). H-index=37, (25 from 2019). I10 index=74, (42 from 2019).
https://scholar.google.es/citations?user=sPga5SoAAAAJ.

Roberto Giral Castillón

Surname(s): **Giral Castillón**
Name: **Roberto**
ORCID: **0000-0001-6582-6741**
ScopusID: **6701717039**
ResearcherID: **D-1640-2010**
Email: **roberto.giral@urv.cat**
Personal web page: **http://scholar.google.es/citations?user=sPga5SoAAAAJ**

Current professional situation

Employing entity: Universitat Rovira i Virgili
Department: Escuela Técnica Superior de Ingeniería, Departamento de Ingeniería Electrónica, Eléctrica y Automática
Professional category: Catedrático de Universidad
Start date: 08/08/2019
Type of contract: Civil servant **Dedication regime:** Full time
Primary (UNESCO code): 330700 - Electronic technology
Secondary (UNESCO code): 330703 - Circuit design
Tertiary (UNESCO code): 120326 - Simulation

Education

University education

Doctorates

Doctorate programme: Dr. Ing. Telecomunicación
Degree awarding entity: Universitat Politècnica de Catalunya **Type of entity:** University
Date of degree: 07/07/1999
Thesis title: Síntesis de estructuras multiplicadoras de tensión basadas en células convertidoras continua-continua de tipo conmutado
Thesis director: Luis Martínez Salamero

Teaching experience

Experience supervising doctoral thesis and/or final year projects

1 Project title: Desarrollo de un Sistema de Iluminación Solar para el Ahorrro de Energía Eléctrica en el Alumbrado Público de México
Type of project: Doctoral thesis
Co-director of thesis: Roberto Giral Castillón; Beatriz Pico González
Entity: Universitat Rovira i Virgili **Type of entity:** University
Student: Juan Francisco Méndez Díaz
Obtained qualification: Sobresaliente
Date of reading: 18/10/2018

2 Project title: Estudio de un Control de Corriente a Frecuencia Ajustada por Feedforward para Convertidores Conmutados
Type of project: Doctoral thesis
Co-director of thesis: Roberto Giral Castillón; Javier Calvente Calvo
Entity: Universitat Rovira i Virgili **Type of entity:** University
Student: Guillermo Ruíz Magaz
Obtained qualification: Sobresaliente cum laude por unanimidad
Date of reading: 15/09/2015

3 Project title: PEM Fuel Cell Modeling and Converter Design for a 48 V DC Power Bus
Type of project: Doctoral thesis
Co-director of thesis: Roberto Giral Castillón; Javier Calvente Calvo
Entity: Universitat Rovira i Virgili
Student: Carlos Alberto Restrepo Patiño
Obtained qualification: Apto cum laude y premio extraordinario
Date of reading: 22/06/2012

European doctorate: Yes

4 Project title: Fuel Cell Modeling and Control for Fuel Consumption Optimization
Type of project: Doctoral thesis
Co-director of thesis: Roberto Giral Castillón; Alfonso Romero Nevado
Entity: Universitat Rovira i Virgili **Type of entity:** University
Student: Carlos Andrés Ramos Paja
Obtained qualification: Sobresaliente cum laude y premio extraord.
Date of reading: 15/07/2009
Quality recognition: Yes

5 Project title: Modelling and control of an asymmetric interleaved DC to DC switching converter
Type of project: Doctoral thesis
Co-director of thesis: Roberto Giral Castillón; Javier Calvente Calvo
Entity: Universitat Rovira i Virgili **Type of entity:** University
Student: Eliana Isabel Arango Zuluaga
Obtained qualification: Sobresaliente cum laude
Date of reading: 06/07/2009

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 Name of the project: Plataforma de Cargadores de Baterías Embarcados para Vehículos Eléctricos Universal
Degree of contribution: Researcher
Entity where project took place: Universitat Rovira i Virgili
Name principal investigator (PI, Co-PI. ..): Javier Calvente Calvo; Roberto Giral Castillón
Nº of researchers: 5
Funding entity or bodies:
FEDER Una manera de hacer Europa
MCIN/AEI/ 10.13039/501100011033 **Type of entity:** State agency
Type of participation: Team member
Code according to the funding entity: PID2021-124229NB-I00
Start-End date: 01/09/2022 - 31/08/2026 **Duration:** 4 years
Total amount: 121.000 €

2 Name of the project: Herramientas para la estandarización en análisis y diseño de la interconexión de convertidores electrónicos de potencia.
Degree of contribution: Researcher
Entity where project took place: Universitat Rovira i Virgili **Type of entity:** University
Name principal investigator (PI, Co-PI. ..): Angel Cid Pastor; Carlos Olalla Martínez
Nº of researchers: 5
Funding entity or bodies:

Agencia Estatal de Investigación/ FEDER **Type of entity:** State agency

Type of participation: Team member
Code according to the funding entity: DPI2017-84572-C2-1-R
Start-End date: 01/01/2018 - 31/12/2020
Total amount: 110.000 €

3 Name of the project: Diseño y control digital de convertidores conmutados del sistema de tracción del vehículo eléctrico e híbrido con modificación dinámica de la tensión de inversor
Degree of contribution: Researcher
Entity where project took place: Universitat Rovira i Virgili
Name principal investigator (PI, Co-PI. ..): Enric Vidal Idiarte; Javier Calvente Calvo
Nº of researchers: 6
Funding entity or bodies:
Agencia Estatal de Investigación, FEDER **Type of entity:** State agency

Type of participation: Team member
Code according to the funding entity: DPI2016-80491-R
Start-End date: 30/12/2016 - 29/12/2019 **Duration:** 3 years
Total amount: 116.600 €

R&D non-competitive contracts, agreements or projects with public or private entities

1 Name of the project: Stability Measurements of an On-Board Battery Charger
Name principal investigator (PI, Co-PI. ..): Roberto Giral
Nº of researchers: 3
Funding entity or bodies:
Lear Corporation Holding Spain, SLU **Type of entity:** Business
City funding entity: Valls, Catalonia, Spain
Start date: 14/02/2019 **Duration:** 1 day
Total amount: 360 €

2 Name of the project: Stability Study of an On-Board Battery Charger
Name principal investigator (PI, Co-PI. ..): Roberto Giral
Nº of researchers: 6
Funding entity or bodies:
Lear Corporation Holding Spain, SLU **Type of entity:** Business
City funding entity: Valls, Catalonia, Spain
Start date: 01/06/2018 **Duration:** 2 months
Total amount: 16.128 €

3 Name of the project: Control of DC-DC converters in PV appplications
Entity where project took place: Universitat Rovira i Virgili
Degree of contribution: Researcher
Entity where project took place: Universitat Rovira i Virgili **Type of entity:** University
Name principal investigator (PI, Co-PI. ..): Roberto Giral / Javier Calvente
Nº of researchers: 2
Funding entity or bodies:
Knowledge on Power (KOP) **Type of entity:** Business

City funding entity: Italy

Code according to the funding entity: T10159S
Start date: 2010 **Duration:** 1 year
Total amount: 7.500 €

Results

Industrial and intellectual property

1 Title registered industrial property: On-board charger (OBC) having grid frequency rejecter
Type of industrial property: Patent of invention
Inventors/authors/obtainers: Antonio Martinez Perez; Adria Marcos Pastor; Antonio Leon Masich; Roberto Giral Castillon; Javier Calvente Calvo; Enric Vidal Idiarte; Hugo Valderrama Blavi
Entity holder of rights: Lear Corporation
Nº of application: US2021/0028691A1
Country of inscription: United States of America
Date of register: 26/07/2019
Conferral date: 08/03/2022
Nº of patent: US11271473B2

2 Title registered industrial property: Metodo e dispositivo per la massimizzazione della potenza elettrica prodotta da un generatore, in particolare un generatore basato su una fonte energetica rinnovabile
Type of industrial property: Propiedad Intelectual (otros)
Inventors/authors/obtainers: Bianconi, E.; Petrone, G.; Spagnuolo, G.; Femia, N.; Vitelli, M.; Calvente Calvo, F.J.; Giral Castilon, R.
Entity holder of rights: Bitron Industrie, S.p.A.
Nº of application: TO2010A000661
Country of inscription: Italy
Date of register: 30/07/2010
Conferral date: 26/07/2013

3 Title registered industrial property: Fuente de alimentación concebida para funcionar en modo entrelazado
Type of industrial property: Propiedad Intelectual (otros)
Inventors/authors/obtainers: Calvente Calvo, J.; Cid Pastor, A.; Giral Castillón, R.; Martínez Salamero, L.; Utkin, V.I.
Entity holder of rights: Universitat Rovira i Virgili
Country of inscription: Spain
Date of register: 28/09/2010
Conferral date: 16/03/2012

Scientific and technological activities

Scientific production

Publications, scientific and technical documents

1 Restrepo, C.; Barrueto, B.; Murillo-Yarce, D.; Muñoz, J.; Vidal-Idiarte, E.; Giral, R.. Improved Model Predictive Current Control of the Versatile Buck-Boost Converter for a Photovoltaic Application. IEEE Transactions on Energy Conversion. 37 - 3, pp. 1505 - 1519. IEEE, 09/2022. ISSN 0885-8969
DOI: 10.1109/TEC.2022.3183986

2 El Aroudi, A.; Haroun, R.; Al-Numay, M.S.; Calvente, J.; Giral, R.. A Large-Signal Model for a Peak Current Mode Controlled Boost Converter With Constant Power Loads. IEEE Journal of Emerging and Selected Topics in Power Electronics. 9 - 1, pp. 559 - 568. IEEE, 02/2021. ISSN 2168-6777
DOI: 10.1109/JESTPE.2019.2960696

3 Restrepo, C.;; González-Castaño, C.;; Muñoz, J.;; Chub, A.;; Vidal-Idiarte, E.;; Giral, R.;. An MPPT algorithm for PV systems based on a simplified photo-diode model. IEEE Access. 9, pp. 33189 - 33202. IEEE, 02/2021. ISSN 2169-3536

4 El Aroudi, A.; Haroun, R.; Al-Numay, M.S.; Calvente, J.; Giral, R.. Fast-Scale Stability Analysis of a DC–DC Boost Converter With a Constant Power Load. IEEE Journal of Emerging and Selected Topics in Power Electronics. 9 - 1, pp. 548 - 558. IEEE, 02/2021. ISSN 2168-6777
DOI: 10.1109/JESTPE.2019.2960564

5 González-Castaño, C.; Restrepo, C.; Giral, R.; García-Amoros, J.; Vidal-Idiarte, E.; Calvente, J.. Coupled inductors design of the bidirectional non-inverting buck–boost converter for high-voltage applications. IET Power Electronics. 13 - 14, pp. 3188 - 3198. IET, 04/11/2020. ISSN 1755-4535
DOI: 10.1049/iet-pel.2019.1479

6 González-Castaño, C.; Restrepo, C.; Giral, R.; Vidal-Idiarte, E.; Calvente, J.. ADC Quantization Effects in Two-Loop Digital Current Controlled DC-DC Power Converters: Analysis and Design Guidelines. Applied Sciences. 10 - 20, pp. 7179. MDPI, 15/10/2020. ISSN 2076-3417
DOI: 10.3390/app10207179

7 Enric Vidal Idiarte; Carlos Restrepo; Abdelali El Aroudi; Javier Calvente; Roberto Giral. Digital Control of a Buck Converter Based on Input-Output Linearization. An Interpretation Using Discrete-Time Sliding Control Theory. Energies. 12 - 14, pp. 2738. MDPI, 17/07/2019. ISSN 0885-8993
DOI: 10.3390/en12142738

8 Restrepo, C.; Konjedic, T.; Flores-Bahamonde, F.; Vidal-Idiarte, E.; Calvente J.; Giral, R.. Multisampled Digital Average Current Controls of the Versatile Buck-Boost Converter. IEEE Journal of Emerging and Selected Topics in Power Electronics. 7 - 2, pp. 879 - 890. IEEE, 06/2019. ISSN 2168-6777
DOI: 10.1109/JESTPE.2018.2888980

9 Mendez-Diaz, F.; Pico, B.; Vidal-Idiarte, E.; Calvente J.; Giral, R.. HM/PWM Seamless Control of a Bidirectional Buck-Boost Converter for a Photovoltaic Application. IEEE Transactions on Power Electronics. 34 - 3, pp. 2887 - 2899. IEEE, 03/2019. ISSN 0885-8993
DOI: 10.1109/TPEL.2018.2843393

10 Lopez-Santos, O.; Garcia, G.; Martinez-Salamero, L.; Giral, R.; Vidal-Idiarte, E.; Merchan-Riveros, M.; Moreno-Guzman, Y.. Analysis, Design, and Implementation of a Static Conductance-Based MPPT Method. IEEE Transactions on Power Electronics. 34 - 2, pp. 1960 - 1979. IEEE, 02/2019. ISSN 0885-8993
DOI: 10.1109/TPEL.2018.2835814

11 Calvente, J.; El Aroudi, A.; Giral, R.; Cid-Pastor, A.; Vidal-Idiarte, E.; Martinez-Salamero, L.. Design of Current Programmed Switching Converters Using Sliding-Mode Control Theory. Energies. 11 - 8, pp. 2034. MDPI, 08/2018. ISSN 0885-8993
DOI: 10.3390/en11082034

12 Ramirez-Murillo, H; Restrepo, C.; Konjedic, T.; Calvente, J.; Romero, A.; Baier, CR.; Giral, R.. An Efficiency Comparison of Fuel-Cell Hybrid Systems Based on the Versatile Buck-Boost Converter. IEEE Transactions on Power Electronics. 33 - 2, pp. 1237 - 1246. IEEE, 02/2018. ISSN 0885-8993
DOI: 10.1109/TPEL.2017.2678160

13 Vidal-Idiarte, E.; Marcos-Pastor, A.; Giral, R.; Calvente, J.; Martinez-Salamero, L.. Direct digital design of a sliding mode-based control of a PWM synchronous buck converter. IET Power Electronics. 10 - 3, pp. 1714 -1720. 10/2017. ISSN 1755-4535
DOI: 10.1049/iet-pel.2016.0975

14 El Aroudi, A.; Calvente, J.; Giral, R.; Al-Numay, M.; Martinez-Salamero, L.. Boundaries of Subharmonic Oscillations Associated to Filtering Effects of Controllers and Current Sensors in Switched Converters Under CMC. IEEE Transactions on Industrial Electronics. 63 - 8, pp. 4826. (United States of America): 08/2016. Available on-line at: <https://doi.org/10.1109/TIE.2015.2458966>. ISSN 0278-0046
DOI: 10.1109/TIE.2015.2458966

15 Restrepo, C.; Garcia, G.; Calvente, J.; Giral, R.; Martinez-Salamero, L.. Static and Dynamic Current-Voltage Modeling of a Proton-Exchange Membrane Fuel-Cell Using an Input-Output diffusive approach. IEEE Transactions on Industrial Electronics. 63 - 2, pp. 1003 - 1015. (United States of America): 07/2016. ISSN 0278-0046
DOI: 10.1109/TIE.2015.2480383

16 Gonzalez Montoya, D.; Ramos-Paja, C.A.; Giral, R.. Maximum power point tracking of photovoltaic systems based on the sliding mode control of the module admittance. Electric Power Systems Research. 136, pp. 125 - 134. (Switzerland): 02/2016. ISSN 0378-7796
DOI: 10.1016/j.epsr.2016.02.001

17 Gonzalez Montoya, D.; Ramos-Paja, C.A.; Giral, R.. Improved Design of Sliding-Mode Controllers Based on the Requirements of MPPT Techniques. IEEE Transactions on Power Electronics. 31 - 1, pp. 235 - 247. (United States of America): IEEE, 01/2016. ISSN 0885-8993
DOI: 10.1109/TPEL.2015.2397831

18 Zhioua, M.; El Aroudi, A.; Belghith, S.; Bosque-Moncusí, J. M.; Giral, R.; Al Hosani, K.; Al-Numay, M.. Modeling, Dynamics, Bifurcation Behavior and Stability Analysis of a DC-DC Boost Converter in Photovoltaic Systems. International Journal of Bifurcation and Chaos. 26 - 10, (Singapore): 2016. Available on-line at: <https://doi.org/10.1142/S0218127416501662>. ISSN 0218-1274
DOI: 10.1142/S0218127416501662

19 Restrepo, C.; González-Castaño, C.; Giral, R.. The Versatile Buck-Boost Converter as Power Electronics Building Block: Changes, Techniques, and Applications. IEEE Industrial Electronics Magazine. 17 - 1, pp. 36 - 45. IEEE, 03/2023. ISSN 1932-4529
DOI: 10.1109/MIE.2022.3153280

20 Madrid, E.; Murillo-Yarce, D.; Restrepo, C.; Muñoz, J.; Giral, R.. Modelling of SEPIC, Ćuk and Zeta Converters in Discontinuous Conduction Mode and Performance Evaluation. Sensors. 21 - 22, pp. 7434. MDPI, 11/2021. ISSN 1424-8220
DOI: 10.3390/s21227434

21 González-Castaño, C.; Restrepo, C.; Sanz, F.; Chub, A.; Giral, R.. DC Voltage Sensorless Predictive Control of a High-Efficiency PFC Single-Phase Rectifier Based on the Versatile Buck-Boost Converter. Sensors. 21 - 15, pp. 5107. MDPI, 07/2021. ISSN 1424-8220
DOI: 10.3390/s21155107

22 Díaz Martínez, D.;; Trujillo Codorniu, R.;; Giral, R.;; Vázquez Seisdedos, L.;. Evaluation of Particle Swarm Optimization Techniques Applied to Maximum Power Point Tracking in PV systems. Internacional Journal of Circuit Theory and Applications. 49 - 7, pp. 1849 - 1867. Wiley, 07/2021. ISSN 0098-9886
DOI: 10.1002/cta.2978

23 Alsmadi, Y.M.;; Alqahtani, A.;; Giral, R.;; Vidal-Idiarte, E.;; Martinez-Salamero, L.;; Utkin, V.;; Xu, L.;; Abdelaziz, A.Y.;. Sliding mode control of photovoltaic based power generation systems for microgrid applications. International Journal of Control. 94 - 6, pp. 1704 - 1715. Taylor & Francis, 06/2021. ISSN 0020-7179
DOI: 10.1080/00207179.2019.1664762

24 Ramos-Paja, C.E.;; González-Motoya, D.;; Villegas-Ceballos, J.P.;; Serna-Garcés, S.I.;; Giral, R.;. Sliding-mode controller for a photovoltaic system based on a Cuk converter. International Journal of Electrical and Computer Engineering (IJECE). 11 - 3, pp. 2027 - 2044. Institute of Advanced Engineering and Science (IAES), 06/2021.
DOI: 10.11591/ijece.v11i3.pp2027-2044

25 El Aroudi, A.; Al-Numay, M.; Calvente, J.; Giral, R.; Rodriguez, E.; Alarcon, E.. Prediction of Subharmonic Oscillation in Switching Regulators: From a Slope to a Ripple Standpoint. International Journal of Electronics. 103 - 12, pp. 2090 - 2109. (United Kingdom): 2016. Available on-line at: <https://doi.org/10.1080/00207217.2016.1178342>. ISSN 0020-7217
DOI: 10.1080/00207217.2016.1178342

Works submitted to national or international conferences

1 **Title of the work:** Multifrequency Power Transfer in a Power Distribution Line
Name of the conference: ISIE 2023 - IEEE 32nd International Symposium on Industrial Electronics
Type of event: Conference
Type of participation: Participatory - oral communication
Corresponding author: No
City of event: Helsinki, Finland
Date of event: 19/06/2023
End date: 21/06/2023
Organising entity: IEEE **Type of entity:** Associations and Groups
With external admission assessment committee: Yes
Type of contribution: Scientific paper
Genaro-Muñoz, X.; Valderrama-Blavi, H.; Giral, R."Proceedings of ISIE 2023".
DOI: 10.1109/ISIE51358.2023.10228093

2 Title of the work: Small-Signal Model and Controller Design of Interleaved Isolated Boost Converter for PV Application
Name of the conference: IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society
Type of event: Conference
Type of participation: Participatory - oral communication
Corresponding author: No
City of event: Brussels, Belgium
Date of event: 17/10/2022
End date: 20/10/2022
Organising entity: IEEE **Type of entity:** Associations and Groups
With external admission assessment committee: Yes
Type of contribution: Scientific paper
Ahmad, U.; Giral, R.; Olalla, C."Proceedings of IECON 2022". ISSN 2577-1647, ISBN 978-1-6654-8025-3
DOI: 10.1109/IECON49645.2022.9968903

3 Title of the work: Microinverter Architecture with Submodule-Level Balancing and Active Power Decoupling
Name of the conference: 2022 IEEE 13th International Symposium on Power Electronics for Distributed Generation Systems (PEDG)
Type of event: Conference
Type of participation: Participatory - oral communication
Corresponding author: No
City of event: Kiel, Germany
Date of event: 26/06/2022
End date: 29/06/2022
Organising entity: IEEE **Type of entity:** Associations and Groups
With external admission assessment committee: Yes
Type of contribution: Scientific paper
Ahmad, U.; Giral, R.; Olalla, C."Proceedings of PEDG 2022". ISSN 2329-5767, ISBN 978-1-6654-6618-9
DOI: 10.1109/PEDG54999.2022.9923102

4 Title of the work: Generación de una Referencia de Triple Armónico de Red para un Sistema de Distribución de Energía Multifrecuencia
Name of the conference: XXIX Seminario Anual de Automática, Electrónica Industrial e Instrumentación (SAAEI'22)
Type of event: Conference
Type of participation: Participatory - oral communication
Corresponding author: No
City of event: Lleida, Spain
Date of event: 06/06/2022
End date: 08/06/2022
Organising entity: Universitat de Lleida **Type of entity:** University
With external admission assessment committee: Yes
Type of contribution: Scientific paper
Genaro-Muñoz, X.; Valderrama-Blavi, H.; Giral, R."Actas del Congreso".

5 **Title of the work:** DC transformer based on the versatile DC-DC noninverting buck-boost converter for fuel cell emulation
Name of the conference: 2017 IEEE Southern Power Electronics Conference (SPEC)
Corresponding author: No
City of event: Puerto Varas, Chile
Date of event: 04/12/2017
End date: 08/12/2017
Organising entity: IEEE **Type of entity:** Associations and Groups
Flores-Bahamonde, F.; Rivera, M.; Baier, C.; Calvente, J.; Giral, R.; Restrepo, C.
DOI: 10.1109/SPEC.2017.8333636

6 **Title of the work:** Digital current control of the versatile buck-boost converter for photovoltaic applications
Name of the conference: 2017 IEEE 8th International Symposium on Power Electronics for Distributed Generation Systems (PEDG)
Corresponding author: No
City of event: Florianópolis, Brazil
Date of event: 17/04/2017
End date: 20/04/2017
Organising entity: IEEE **Type of entity:** Associations and Groups
Ruiz, F.; Fuentes, C.; Flores-Bahamond, F.; Calvente, J.; Giral, R.; Restrepo, C.
DOI: 10.1109/PEDG.2017.7972464

R&D management and participation in scientific committees

Organization of R&D activities

1 **Title of the activity:** XXIX Seminario Anual de Automática, Electrónica Industrial e Instrumentación
Type of activity: Congreso **Geographical area:** Non EU International
City of event: Tarragona, Spain
City convening entity: Japan
Type of participation: Local Organizing Comitteee Member
Start-End date: 06/06/2022 - 08/06/2022

2 **Title of the activity:** 2018 International Symposium on Nonlinear Theory and Its Applications (NOLTA2018)
Type of activity: Congreso **Geographical area:** Non EU International
City of event: Tarragona, Spain
City convening entity: Japan
Type of participation: Technical Program co-secretary
Start-End date: 02/10/2018 - 06/10/2018

R&D management

Name of the activity: Gestor del área PIN-IEA de la División de Coordinación, Evaluación y Seguimiento Científico Técnico
Type of management: Management of R&D&I actions and projects
Entity: Agencia Estatal de Investigación
Start date: 01/06/2019 **Duration:** 4 years - 7 months

Other achievements

Stays in public or private R&D centres

Entity: Universidad de Talca
Type of entity: University
Faculty, institute or centre: Facultad de Ingeniería
City of entity: Curicó, Chile
Start date: 18/02/2019
Duration: 3 months
Goals of the stay: Post-doctoral
Provable tasks: Articulos conjuntos

CV Àngel Cuadras

Àngel Cuadras és professor agregat del departament d'Enginyeria Electrònica de la Universitat Politècnica de Catalunya des del 2003. Doctor en Física per la Universitat de Barcelona (2002) vaig realitzar una estada postdoctoral a Chemnitz en recerca de bateries. En 25 anys de recerca, he treballat en física de semiconductors, instrumentació biomèdica, materials per a la captació d'energia. Des del 2007 estic treballant en dos camps: en sistemes electrònics de mesura i caracterització de bateries per a la determinació dels seus estats de càrrega i d'envelliment. A més a més, estic especialment interessat en l'estudi d'aplicacions i mesura d'entropia. En particular, he treballat en els primers sistemes experimentals per a la mesura d'entropia i he desenvolupat models d'evolució d'entropia de components electrònics, sistemes electrònics, bateries, edificis, vehicles. Actualment estic centrat en aplicacions interdisciplinars, per relacionar eficiència energètica amb eficiència social, ambiental i econòmica. He publicat 25 articles en revista i més de 40 presentacions a congressos. He dirigit una tesi doctoral i vora 40 treballs de final d'estudis. He participat en més de 20 projectes competitius. Vaig ser co-organitzador del congrés XIV Sistems Signals and Devices (SSD2014).

SANDRA BERMEJO BROTO

The person is Professor in Electronics from 2023 and earned the M.Sc. in Electrical Engineering and the Ph.D. degree in 2000 and 2004 respectively. Between 2015 and 2023, she served as the Vice Dean of the Barcelona School of Telecommunication Engineering (ETSETB) at the Universitat Politècnica de Catalunya (UPC). Her research is developed within the Electronic Engineering Department at UPC, where she leads the electro-kinetics research group. Her research objectives primarily revolve around the advancement of technology tailored for the production of functional nano-devices through electrowetting, electrospray, and electrothermal techniques, with applications spanning the domains of photonics, energy, and sensing. The research group specializes in fabricating metamaterials designed for energy and sensing applications, encompassing diverse energy harvesting and storage devices, along with the formulation of electrolytes tailored for energy, humidity, and proximity sensors. The group has the achievement of developing a pioneering supercapacitor for energy harvesting, fully engineered with dielectric nanoparticles. She has actively contributed to a total of around 30 competitive research projects, both at the national and European levels, leading four of them. She has managed four technology transfer projects with IT companies and research centers. She is author of around 50 international journal papers, more than 60 conference contributions and holds three patents.

Francisco Javier Calvente Calvo (javier.calvente@urv.cat) ORCID: 0000-0001-8012-1889

Enginyer de Telecomunicacions per la UPC des del 1994. El 1997 va obtenir la plaça de Titular d'Escola Universitària i el 2003 la de Titular d'Universitat a l'àrea d'Enginyeria de Sistemes i Automàtica, al Departament d'Enginyeria Electrònica, Elèctrica i Automàtica de la URV.

El 1998, va realitzar una estada de 12 mesos a Alcatel Space Industries, a Toulouse (França), on va col·laborar en el disseny del sistema elèctric d'un satèl·lit. L'any 2001 va defensar la tesi doctoral titulada 'Control en mode lliscant aplicat a sistemes de condicionament de potència de satèl·lits'. Des del 1994 fins avui ha participat de manera continuada en projectes del Pla Nacional de Recerca. Ha estat Investigador Principal a 4 d'aquests projectes. El 2019 va gaudir d'una estada de recerca de 6 mesos a la Universitat British Columbia, a Vancouver (Canadà).

També ha col·laborat en contractes amb empreses destacant els realitzats amb LEAR Corporation, a la temàtica de carregadors de bateries de vehicles elèctrics.

En docència ha estat responsable, entre d'altres, de les assignatures: 'Control Automàtic', 'Modelat i Simulació de Sistemes Dinàmics', 'Processament de Senyal', 'Teoria de Circuits', 'Electrònica Analògica', 'Modelat i Control de Convertidors Commutats' o 'Estadística i Mètodes Transformats'. Ha participat a l'elaboració de plans d'estudis de grau i postgrau, destacant el Màster Universitari en Tecnologies del Vehicle Elèctric. A més, ha dirigit o codirigit 7 tesis doctorals que han obtingut la màxima qualificació, una amb premi extraordinari de doctorat.

Ha obtingut l'avaluació positiva en 4 trams de recerca (sexenis) i 5 trams de docència (quinquennis).

IDOIA SANMARTIN BIURRUN

Obtuvo el título de Ingeniero Industrial en 2007 y el máster en “Energías Renovables: Generación Eléctrica" en 2009, ambos por la Universidad Pública de Navarra (UPNA). En julio de 2013 defiende la tesis doctoral titulada “Integración de Energías Renovables y Almacenamiento Energético en Microrredes Eléctricas”, obteniendo el título de doctora por la UPNA.

Su labor investigadora comienza en 2007 con una estancia en la universidad de Sheffield (Reino Unido), donde se integra en el grupo de investigación ISL. En octubre de dicho año se incorpora al grupo de investigación INGEPER de la UPNA, inicialmente con una beca de formación y posteriormente con una predoctoral, trabajando en sistemas aislados de control de tráfico en el marco de un proyecto del plan nacional coordinado con la Universidad Politécnica de Valencia. A partir de 2009 su labor investigadora se centra en el análisis de sistemas de almacenamiento para la integración en red de energías renovables. Además, es coautora de 14 artículos en revistas internacionales, 2 capítulos de libros y 23 artículos en congresos internacionales. Asimismo, ha participado en 17 proyectos de I+D financiados por organismos públicos, dos de ellos como investigadora principal y 23 financiados por empresas.

Su labor docente comienza en septiembre de 2014, fecha en la que es contratada como Ayudante Doctor, en 2018 es contratada como Contratado Doctor y en 2023 como Titular de Universidad. Desde entonces imparte docencia en asignaturas del grado y máster. Desde 2008 es secretaría técnica de la Cátedra de Energías Renovables de la UPNA.